

REMARKS/ARGUMENTS

This submission accompanies an RCE and serves as a response to the Final Rejection dated November 18, 2008. Reconsideration of the application is respectfully requested.

As presently worded, both independent claim 40 and independent claim 57 include an abnormality detection part “configured to assess and detect a processing abnormality in said substrate processing apparatus based on a combination of said plurality of control elements collected by said collection part...”. Respectfully, it is imperative to properly interpret and comprehend the significance of the underlined text of these claims.

In the specification, including at page 4, lines 2-5, it is mentioned that a processing abnormality in the cleaning is detected based on a combination of two or more of the plurality of control elements. Significantly, however, the text goes on to state: “Thus, a processing abnormality can be detected with a higher degree of accuracy as compared to the case where each control element is independently assessed” (emphasis added).

This is the key to appreciate here. It is not enough to provide a system where a processing abnormality can be detected by providing a plurality of sensors or monitors which detect and monitor different parameters, and where each parameter is independently assessed and an “processing abnormality” is made on the basis of the output of the sensor corresponding to each parameter. The present claims are based on inventions which employ a different concept.

The ultimate decision of “processing abnormality” is not made on the basis of assessing the state of the output of a sensor corresponding to any specific parameter. The key is that the combination of outputs leads to a decision of abnormality. It is possible that a given parameter is outside of a permissible range, but another parameter may similarly be out of range, but in a direction which compensates for the deviation from the normal of the first parameter. In such a case, the “combination of parameter outputs” would not lead to a decision of abnormality.

Thus, the point of the limitation “a combination of” is that even if any one of the control elements deviates from a reference value by a predetermined amount, it is possible to reach a decision that no processing abnormalities are present in situations where the effects caused by deviations of other elements compensate or cancel one another, as described at page 24, line 18 to page 25, lines 15 of the instant specification. By judging the “combination” of the plurality of

control elements as a whole, as noted above, a processing abnormality can be detected with a higher degree of accuracy.

For example, in the description of the first embodiment, at page 25, lines 5-15, even when the removal solution discharge time is shorter than a reference value, the amount of removal solution supplied is considered to be the same as the reference value when the flow rate of the removal solution is greater than the reference value. In such a case, the combination of the effects is judged to present a situation where no processing abnormality is present.

Similarly, in the example of the second embodiment, described at page 42, line 23 to page 43, line 8, even when the concentration of the etching solution is lower than the reference value, a decision is reached that the etching solution provides an etching effect within the reference range on a substrate, when the etching solution discharge time is longer than the reference value. This is because it is judged that no processing abnormality is present. In either example, the control element would have been judged individually, one would have reached an erroneous decision of the existence of a processing abnormality. However, since, in accordance with the invention of independent claims 40 and 57, the decision of processing abnormalities is made based on “a combination of a plurality of control elements as a whole”, a decision of no abnormalities is reached in the above examples.

With the claims properly understood and interpreted, it is incorrect to say that any of the prior art of record either discloses or suggests the invention in the instant claims. Thus, neither Konishi (6,145,519), nor Kenji (JP08-145300) discloses monitoring a plurality of control elements individually, and then assessing and detecting a processing abnormality based “on a combination of a plurality of control elements”. In those references, decisions on processing abnormalities are based on the detection and assessment of the signal levels of sensors which correspond to specific parameters.

In the same vein and furthermore, newly cited Song (6,487,472) shows that a fabrication system detects parameters such as temperature, time, pressure and outputs them to a diagnosis system and control system. The diagnosis system analyzes these sensing signals and a control signal from a control system to judge the operating status of the fabrication system. However, nothing in Song teaches detecting a processing abnormality “based on a combination of these

parameters” and in a manner where the deviation of any single element from a predefined range is simply insufficient to reach a decision of a “processing abnormality”.

Thus, all of the references, including the newly cited Song reference, fail to disclose the claimed feature of “detecting a processing abnormality based on a combination of a plurality of control elements,” which is the characteristic feature of the present claims. In contrast thereto, in the cited references, a plurality of control elements are judged individually and the decision of whether a processing abnormality is present is based on the individual assessment of each control element, rather than any combination effect thereof. There is nothing in the combined teaching of the references which leads one to the key features of invention, as described above.

Lastly, and in response to the rejection of the claims on the ground of obvious-type double patenting over certain claims of U.S. patent no. 6,807,455, the applicant, who is clearly familiar with the contents of that patent, respectfully, but emphatically, disputes the notion that the reference actually contains the key feature of the invention which cannot be deemed to be rendered obvious by any of the prior art, nor by the disclosure and, specifically, what is claimed in the applicant’s previously issued U.S. patent no. 6,807,455.

The applicant has discussed independent claims 40 and 57 above. The remaining claims in the application naturally contain the features discussed above and they include their own features, combined with other elements which places them even farther from the prior art of record. Therefore, these claims too are patentable over the prior art.

Accordingly, the Examiner is respectfully requested to reconsider the application, allow the claims as amended and pass this case to issue.

THIS CORRESPONDENCE IS BEING
SUBMITTED ELECTRONICALLY
THROUGH THE UNITED STATES
PATENT AND TRADEMARK OFFICE
EFS FILING SYSTEM
ON FEBRUARY 18, 2009

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